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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/761,128	01/20/2004	Yasuo Arishima	04558/081001	8831

7590 01/31/2007

ROSENTHAL & OSHA L.L.P.
Suite 2800
1221 McKinney
Houston, TX 77010

EXAMINER	
CHUO, TONY SHENG HSIANG	
ART UNIT	PAPER NUMBER
1745	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/31/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/761,128	ARISHIMA ET AL.	
	Examiner	Art Unit	
	Tony Chuo	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 January 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 1/18/07 has been entered.

Response to Amendment

2. Claims 1-18 are currently pending. Claims 1, 7, 10, and 16 do overcome the previously stated 103 rejections. However, upon further consideration, claims 1-18 are currently rejected under the following new 103 rejections.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-4, 6-13, and 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Motomura et al (JP 2002-015743) in view of Kohler et al (US 2003/0224233). The Motomura reference discloses a solid polymer fuel cell

comprising: a cathode layer "3" that is the positive electrode; an anode layer "6" that is the negative electrode; a solid electrolyte "PEM" between the positive and negative electrode; wherein the positive electrode "3" comprises two catalyst layers "1" & "2" where each electrode layer is 1 to 50 μm (See Drawing 1 and paragraphs [0027] & [0046]. It also discloses each of the catalyst layers "1" & "2" containing a mass per unit electrode area of 0.6 mg/cm^2 (See paragraph [0069]). It also discloses a cathode catalyst layer "3" with a similar thickness as the anode catalyst layer "6" since both layers are formed by similar catalyst bed formation ink (See paragraph [0047]). If the anode catalyst layer and cathode catalyst layer are both 20 μm and the electrolyte film is 50 μm, then the laminate would have a total thickness of 90 μm (See paragraph [0069] & [0071]). However, Motomura does not expressly teach an adhesive layer that is disposed between the catalyst layers that has proton conducting property and is similar to the polymer in the catalyst layer. The Kohler reference discloses a carbon black-containing adhesive paste used to laminate a catalyst layer and a gas diffusion layer in a membrane electrode assembly wherein the adhesive contains a Nafión solution that has proton conducting property (See paragraph [0048]). In addition, the Nafion solution in the adhesive is similar to the ion exchange resin in the catalyst layer taught by Motomura et al. Further, Kohler et al also discloses applying the adhesive selectively in patterns such as thin lines or small dots onto the catalyst layer (See paragraph [0034]).

Examiner's note: Since the Kohler adhesive is used to strengthen the bond between the catalyst layer and the gas diffusion layer, it can easily be used to laminate

the two catalyst layers taught by Motomura. Further, if the adhesive taught by Kohler was applied to the interface between the two catalyst layers taught by Motomura, it would not affect the decrease in water content from the innermost catalyst layer toward the outermost catalyst layer. The interface part of each of the catalyst layers is construed as being the area in between the two catalyst layers. Therefore, the Nafion solution in the adhesive would be more in an interface part of each of the electrode layers than in an inner part.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Motomura fuel cell to include an adhesive layer that is disposed between the catalyst layers that has proton conducting property and is similar to the polymer in the catalyst layer in order to laminate the electrode layers without high temperature and high pressure and as a result, securely bond the electrode layers together.

5. Claims 5 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Motomura et al (JP 2002-015743) in view of Kohler et al (US 2003/0224233) as applied to claims 1 and 10 above, and further in view of Dube et al (US 2004/0089357). However, Motomura et al as modified by Kohler et al doe not expressly teach an adhesive layer that has a thickness of 1 to 5 μm. The Dube reference discloses an integrated fuel cell device wherein the layers are laminated with adhesive layers that are thinned to a 5 μm thickness (See paragraph [0048],[0049]). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to

include an adhesive layer that has a thickness of 1 to 5 μm in order to reduce the resistance between the electrode layers and improve the performance of the fuel cell.

Response to Arguments

6. Applicant's arguments with respect to claims 1-18 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tony Chuo whose telephone number is (571) 272-0717. The examiner can normally be reached on M-F, 8:30AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's trainer, Susy Tsang-Foster can be reached on (571) 272-1293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TC

SUSY TSANG-FOSTER
PRIMARY EXAMINER